To: Juett, Lynn[Juett.Lynn@epa.gov]; Stoy, Alyse[Stoy.Alyse@epa.gov]; Mahler, Tom[mahler.tom@epa.gov]; Gieseke, Andrew[Gieseke.Andrew@epa.gov]
From: Vann, Bradley
Sent: Tue 2/2/2016 5:45:38 PM
Subject: FW: Bridgeton Landfill - Well Head Gas Temperatures
2013 to 2015 Well Head Temperatures.pdf

FYI…

Bradley Vann - Remedial Project Manager

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From: Milward, Mark [mailto:MMilward@stlouisco.com]
Sent: Tuesday, February 02, 2016 11:42 AM
To: Yates, Laura <LYates@stlouisco.com>; Haasis, John <JHaasis@stlouisco.com>; 'Chris Nagel' <chris.nagel@dnr.mo.gov>; Vann, Bradley <Vann.Bradley@epa.gov>
Cc: Khan, Faisal <FKhan@stlouisco.com>; Patrick, Sarah <SPatrick@stlouisco.com>; Zlatic, Mike <MZlatic@stlouisco.com>
Subject: Bridgeton Landfill - Well Head Gas Temperatures

I was intrigued by a statement that Republic Services had placed on their Bridgeton Landfill webpage:

The Bridgeton Landfill team announced new data today that shows continued, favorable trends in wellhead temperatures, among other key criteria, at the site. The latest data provides further confirmation that the Landfill is in a managed state. It also reaffirms -- yet again -- that the heat-producing subsurface reaction is isolated to one portion of the Landfill's South Quarry, and it has not impacted the North Quarry, which is the area closest in proximity to the radiologic materials in the adjacent West Lake Landfill. The two-year comparison of wellhead temperatures below depicts the continued decrease in temperatures measured throughout the site.

http://www.bridgetonlandfill.com/sites/default/files/docs/news_updates/Two_Year_Favorable_Trend_Continues_013016.pdf

The above statement is based on a comparison of individual gas extraction well temperature maximums for December 2013 and December 2015. The maximum temperature represents the maximum well head temperature reading collected during the month.

So, as a brief fact check for the statement, I contoured readings for temperatures ranging from 171 degrees F to 211 degrees F for December 2013, December 2014, and December 2015 (see attached maps). Experts generally agree that temperatures above 170 degrees F may be indicative of a landfill fire.

If you buy Republic's data and if the contours are relatively accurate, the following may be possible conclusions representing the current and historic conditions at the Bridgeton Landfill:

•□□□□□□□ The contours do not necessarily indicate a current SSE condition. The contours may also be indicative of where a historic SSE condition occurred and that the temperatures measured are reflective of residual heat.

•□□□□□□□ There are no temperatures above 171 degrees measured at well heads located in the North Quarry during any of the compared months.

•□□□□□□□ There appears to be fewer temperature readings above 171 degrees at well heads located in the Neck Area during December 2015 as compared to December 2013 and December 2014. This could possibly be a result of the heat exchange system that Republic installed during the past year in the Neck Area.

•□□□□□□□□ The approximate distance from the closest well head with a temperature above 171 degrees in the Neck Area to the West Lake Landfill is approximately 1,200 feet.

•□□□□□□□□ Based on temperature readings, the SSE in December 2013 appears to engulf much of the South Quarry encompassing about 17.1 acres of the approximately 30-acre South Quarry.

•□□□□□□□□ Based on temperature readings, the SSE in December 2014 and December 2015 engulfs approximately 10.2 acres and 11.3 acres, respectively. The areas of impact appear to be primarily located in the northeastern and southwestern portions of the South Quarry.

•□□□□□□□□ There appears to be fewer temperatures recorded within the higher 191 degrees to 211 degrees interval range on the December 2015 map, particularly in the northeastern portion of the South Quarry, as compared to the December 2013 and December 2014 maps.

I would contest Republic's statement that the SSE is isolated to one portion of the South Quarry. The December 2015 data generally indicates that two areas are affected, the northeastern and southwestern portions of the South Quarry. Republic may counter that the recent higher temperatures recorded in at least the northeast portion of the South Quarry may represent residual heat from when the SSE was historically active in that area.

In summary, I cannot vehemently argue that this data suggests that the SSE appears to be at least stable, possibly decreasing, and possibly in a managed state. However, there is still much work to do for continued improvement.

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